

REMARKS

Claims 1-7 stand rejected. Reconsideration of the application is respectfully requested.

Rejections Under 35 U.S.C. § 103

The Examiner rejected claims 1-7 under 35 U.S.C. § 103(a) as being unpatentable over Moinpour et al. (U.S. Pat. No. 5,868,857) in view of Matsukawa et al. (U.S. Pat. No. 5,518,542). Specifically, the Examiner stated:

Regarding claim 1, Moinpour et al. disclose (fig 5B) a holding structure (510) having members arranged to hold and rotate (column 4 line 28-37) the substrate (502) about a first axis, the holding structure (510) being coupled to a rotatable member (512).

However, Moinpour et al. is silent on the rotatable member configured to rotate the holding structure about a second axis different from the first axis.

On the other hand, Matsukawa et al. teach on the rotatable member configured to rotate the holding structure (111a, 111b) about a second axis (flipping) different from the first axis for the purpose of providing the ability for testing system to test the wafer from different angle.

It would have been obvious to one having an ordinary skill in the art at the time of the invention was made to modify the robots arm of Moinpour et al. and providing the flipping feature as taught by Matsukawa et al. for the purpose of providing the ability for testing system to test the wafer from different angle.

Regarding claim 2, Moinpour et al. discloses (fig 5B) the members (510) comprises a plurality of wedge assemblies configured to rotate the substrate (502) about the first axis.

Regarding claim 3, Moinpour et al. discloses (fig 5B) the first axis is disposed generally perpendicular to a flat surface of the substrate (502) and extends generally through an axial center of the substrate.

Regarding claims 4, Matsukawa et al. discloses (fig 12) the holding structure comprises two L shaped gripping arms (111a, 111b)

arranged to form a single U shape and configured to hold the substrate substantially parallel to the gripping arms.

Regarding claims 5, 6, Matsukawa et al. discloses the U shaped structure is configured to open and close about the perimeter of the substrate (W).

Regarding claim 7, Moinpour et al. discloses (fig 5B) the holding structure (510) comprises three wedge assemblies (as seen in the figure), at least one wedge assembly coupled to a motor (512) and configured to rotate the substrate (502) about the first axis disposed generally perpendicular to a flat surface of the substrate (502) and extending generally through an axial center of the substrate.

Applicants respectfully traverse this rejection. The burden of establishing a *prima facie* case of obviousness falls on the Examiner. *Ex parte Wolters and Kuypers*, 214 U.S.P.Q. 735 (PTO Bd. App. 1979). Obviousness cannot be established by combining or modifying the teachings of the prior art to produce the claimed invention absent some teaching or suggestion supporting the combination or modification. *See ACS Hospital Systems, Inc. v. Montefiore Hospital*, 732 F.2d 1572, 1577, 221 U.S.P.Q. 929, 933 (Fed. Cir. 1984). Accordingly, to establish a *prima facie* case, the Examiner must not only show that the combination or modification includes *all* of the claimed elements, but also a convincing line of reason as to why one of ordinary skill in the art would have found the claimed invention to have been obvious in light of the teachings of the references. *See Ex parte Clapp*, 227 U.S.P.Q. 972 (B.P.A.I. 1985).

As a preliminary matter, Applicants have made the following assumption based on perceived errors in the Examiner's rejection. For the purposes of this response, Applicants have assumed that the Examiner's reference to Fig. 12 (Matsukawa et al.) is actually directed to Fig. 7,

object 12. If this assumption is incorrect, Applicants respectfully request that the Examiner clarify his rejection such that Applicants may file a more appropriate response.

The present application is directed to an apparatus for inspecting semiconductor wafers. Specifically, in the illustrated embodiment, a holding structure configured to hold a wafer is mounted on a rotational arm to provide a user with a means of inspecting a wafer in any position without having to physically touch the wafer. The holding structure provides a mechanism for holding the wafer and rotating the wafer about an axis that is perpendicular to the surface of the wafer and that extends through the axial center of the wafer. The arm also provides a mechanism for rotating the wafer about an axis parallel to the surface of the wafer. The arm and holding structure are configured to facilitate the visual inspection of the wafer. Accordingly, claim 1 recites an apparatus for inspecting wafers comprising, "a holding structure having members arranged to hold and rotate the substrate about a first axis, the holding structure being coupled to a rotatable member, the rotatable member configured to rotate the holding structure about a second axis different from the first axis."

In contrast, the Moinpour reference relates to cleaning the edges of semiconductor wafers. As explicitly stated, the Moinpour reference is directed to cleaning such edges "using an edge scrubbing mechanism that may be incorporated into a scrubbing tool." Col. 2, lines 65-67. With regard to claim 1, the Examiner stated that the Moinpour reference discloses a holding structure (510) having members arranged to hold and rotate a substrate (502) about a first axis. Applicants respectfully traverse this assertion.

The Moinpour reference discloses edge rollers (510) provided to rotate wafer (502) in a counter-clockwise direction. Col. 4, lines 30-32. The Examiner relies on Figure 5B of the reference as disclosing certain elements of the present invention. Contrary to the Examiner's assertion, the edge rollers (510) cannot be fairly characterized as "a holding structure having members arranged to *hold* and rotate" a wafer as recited in claim 1. Indeed, the edge rollers (510) do not *hold* a wafer at all. The edge rollers (510) are simply implemented to rotate the wafer (502) in a counter-clockwise direction under the control of motors (512) so that an edge cleaning apparatus (600) can scrub the entire circumference of the wafer. As clearly illustrated in Figs. 5A and 5B as well as the corresponding description, the edge rollers (510) *do not* hold the wafer and thus, cannot be fairly characterized as a holding structure having members arranged to hold and rotate a wafer as recited in claim 1.

Furthermore, the combination does not disclose all of the claimed elements. As admitted by the Examiner, the Moinpour reference does not disclose a "rotatable member configured to rotate the holding structure about a second axis different from the first axis," as recited in claim 1. The Examiner cited the Matsukawa reference as providing a rotatable member configured to rotate the holding structure about a second axis different from the first axis. The Matsukawa reference discloses a cleaning system having holding structure (111a, 111b) coupled to a rotatable member (102). While the holding structure (111a, 111b) is coupled to a rotatable member (102) that facilitates rotation of the wafer about the rotatable member, the Matsukawa reference does not disclose any mechanism for rotating the wafer about a second axis different from the first. To accomplish rotation of the wafer about a second axis, such as one perpendicular to the wafer, the holding structure (111a, 111b) must deposit the wafer onto the

wafer support base 130 to allow the spin chuck 120 to rotate the wafer after the holding structure (111a, 111b) has released the wafer. Thus, since the Matsukawa reference does not disclose a holding structure arranged to hold and rotate the wafer about a first axis, and configured to rotate the wafer about a second axis, it is clear that the Matsukawa reference does not disclose all of the elements of the recited claims. Further, since the Matsukawa reference fails to cure the deficiencies of the Moinpour reference (i.e., a holding structure having members arranged to hold and rotate a wafer) it is clear that neither reference alone or in combination provides a *prima facie* case of obviousness. The cited combination fails to disclose all of the elements recited in claim 1, much less provide any suggestion or motivation to combine these disparate references in the manner recited in claim 1. Accordingly, Applicants respectfully submit that claim 1 is allowable over the cited references for at least these reasons.

While it is clear that the cited combination fails to disclose all of the elements necessary to support a *prima facie* case of obviousness, there is also no suggestion to combine these references. Specifically, Applicants would like to address the Examiner's assertions regarding the suggestion to modify the cleaning system disclosed in the Moinpour reference. The Examiner stated that the Moinpour reference could be modified by providing the flipping feature as taught by Matsukawa for "the purpose of providing the ability for testing system to test the wafer from different angle." However, as previously discussed, the Moinpour reference is directed to *cleaning* a wafer, not *testing* a wafer. Accordingly, the technique disclosed by the Moinpour reference provides an apparatus for cleaning the edges, top surface and bottom surface of a wafer. Because the Moinpour reference already teaches a technique for cleaning the entire surface of the substrate there would be no motivation to further modify the technique with

aspects of the Matsukawa reference. The Examiner's assertion that one skilled in the art would be motivated to modify the *cleaning* system of Moinpour to provide the ability to *test* a wafer from different angles is without merit. Thus, not only do the cited references fail to disclose each of the elements recited in the present claims, but the Examiner has failed to meet his burden in showing why one skilled in the art would be motivated to modify or combine these disparate teachings in the manner recited in claim 1.

Claims 2-7 ultimately depend from independent claim 1. These dependent claims are patentable for the reasons provided with respect to independent claim 1 as well as for the subject matter recited in each dependent claim. For instance, with regard to claim 2, the Examiner stated that the Moinpour reference discloses members (510) comprising a plurality of wedge assemblies configured to rotate the substrate (502) about the first axis. Applicants first note that in rejecting claim 2, the Examiner correlated the edge rollers (510) with the *members* of the holding structure as recited in claims 1 and 2. This is inconsistent with the Examiner's rejection of claim 1 in which the same edge rollers (510) were correlated with the *holding structure* itself. Applicants respectfully submit that this characterization (i.e., the edge rollers (510) as the recited holding structure) is inaccurate for the reasons discussed above. As previously discussed, the claims recite "a holding structure having members arranged to hold and rotate the substrate about a first axis." Thus, the present claims recite two distinct elements: a "holding structure" and "members."

To the Examiner's latter characterization, the edge rollers (510) of the Moinpour reference cannot be fairly correlated with the members of the holding structure either. The

reference shows two spinning members, independent from the holding structure, that are capable of rotating the substrate. The Moinpour reference does not, however, disclose "a holding structure having members arranged to hold and rotate the substrate about a first axis." Because the edge rollers (510) are not part of any holding mechanism disclosed in the Moinpour reference, it is clear that Moinpour does not disclose an apparatus wherein members of the holding structure "comprise a plurality of wedge assemblies configured to rotate the substrate about the first axis," as recited in claim 2. While Applicants traverse any suggestion that the edge rollers (510) are in any way related to holding a wafer, Applicants respectfully request that the Examiner clarify any perceived correlation between the edge rollers (510) and elements of the present claims and particularly state which element is believed to have been disclosed by edge rollers (510) of the Moinpour reference.

The Examiner rejected claim 6 on the basis of the Matsukawa reference, stating that the reference discloses the U shaped structure configured to open and close about the perimeter of the substrate. However, Applicants respectfully submit that the Matsukawa reference fails to disclose the "tensioning springs" recited in claim 6. If the Examiner chooses to maintain this rejection, Applicants request that the Examiner specifically identify the location of such information.

Because the cited references do not disclose all of the elements, much less provide any suggestion to combine or modify the references in the manner recited in claim 1, they do not support a *prima facie* case for obviousness. Furthermore, claims 2-7 are believed to be allowable for their subject matter separately recited, as well as for the reasons provided above with respect

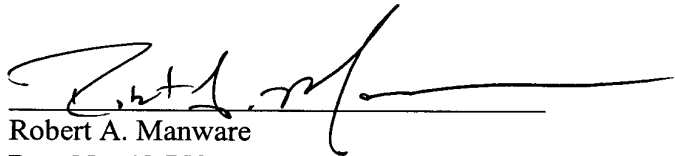
to independent claim 1. Accordingly, Applicants respectfully request withdrawal of the Examiner's rejection and allowance of claims 1-7.

Conclusion

In view of the remarks set forth above, Applicants respectfully request allowance of claims 1-7. If the Examiner believes that a telephonic interview will help speed this application toward issuance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,

Date: August 18, 2003

A handwritten signature in dark ink, appearing to read 'R. A. Manware', is written over a horizontal line.

Robert A. Manware
Reg. No. 48,758
FLETCHER YODER
P.O. Box 692289
Houston, TX 77269-2289
(281) 970-4545